

RESPONSE TO OFFICE ACTION

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REMARKS

This response is intended as a complete response to the Office Action dated July 13, 2005. In view of the following discussion, the Applicants believe that all claims are in allowable form.

RESTRICTION ELECTION

The Applicants hereby affirm the election of claims 1-13 for prosecution. Claims 14-20 have been withdrawn from prosecution.

CLAIM REJECTIONS**§112 Claims 1-13**

Claims 1-13 stand rejected as being indefinite due to the limitation "an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas."

The Examiner contends that the above-recited limitation may refer to from one to three additives. The Applicants hereby clarify for the record that the above-recited limitation refers to three constituents: (1) a fluorine-rich fluorocarbon or hydrofluorocarbon gas; (2) a nitrogen-containing gas; and (3) a hydrogen-rich hydrofluorocarbon gas.

Thus, the Applicants submit that claims 1-13 comply with 35 USC §112 and are patentable thereunder. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

§102 Claims 1-2, 4-6, 9, and 12

Claims 1-2, 4-6, 9, and 12 stand rejected as being anticipated by United States Patent No. 6,869,542 issued March 22, 2005, to *Desphande, et al.* (hereinafter *Desphande*). The Applicants respectfully disagree.

Independent claim 1 recites limitations not taught or suggested by *Desphande*. With respect to 35 USC §102, or "anticipation," the Federal Circuit has repeatedly stated that "there is no anticipation unless all of the same elements are found in exactly

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the same situation and united in the same way . . . in a single prior art reference." Perkin-Elmer Corp. v. Computervision Corp., 732 F.2d 888, 894 (Fed. Cir., 1984); Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 771, 218 U.S.P.Q. (BNA) 781, 789 (Fed. Cir. 1983). Here, *Desphande* does not identify each of the claimed elements as arranged in independent claim 1 so as to establish a *prima facie* case of anticipation.

The Examiner, citing *Desphande*, col. 12, lines 23-31, asserts that *Desphande* teaches an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. However, the cited disclosure teaches and suggests only the selection of one of the gases contained in each of a nitrogen gas, a fluorocarbon, an oxidizer, and a noble diluent. (*Desphande*, col. 12, lines 23-31.) There is no teaching or suggestion at the cited location nor anywhere else in *Desphande* that indicates that multiple gases may be selected from any of the categories of gases in the disclosed etching gas mixture. As such, *Desphande* fails to teach or suggest an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1.

Thus, claims 1-2, 4-6, 9, and 12 are patentable over *Desphande*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

§103 Claims 3, 7-8, 10-11, and 13**A. Claims 10-11**

Claims 10-11 stand rejected as being unpatentable over *Desphande* in view of United States Patent No. 6,894,245 issued on May 17, 2005 to *Hoffman, et al.* (hereinafter *Hoffman*). The Applicants respectfully disagree.

Hoffman is a commonly-assigned, 102(e)-type reference that may not preclude patentability under 35 USC §103. Specifically, *Hoffman* was filed prior to and was first published after the filing date of the present application, making it a 102(e)-type reference. In addition, the inventors of *Hoffman* and the present application were

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under an obligation to assign to the present assignee, Applied Materials, Inc., at the time the invention was made. Thus, *Hoffman* may not preclude patentability of the present application under 35 USC §103. (See, 35 USC §103(c).)

Thus, claims 10-11 are patentable over *Desphande* in view of *Hoffman*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

B. Claims 7-8

Claims 7-8 stand rejected as being unpatentable over *Desphande* in view of United States Patent No. 6,828,251 issued on December 7, 2004 to *Su, et al.* (hereinafter *Su*) and further in view of United States Patent No. 6,287,978 issued on September 11, 2001 to *Becker, et al.* (hereinafter *Becker*). The Applicants respectfully disagree.

Independent claim 1 recites limitations not taught or suggested by any combination of *Desphande*, *Su*, and *Becker*. As discussed above, *Desphande* fails to teach or suggest an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. *Su* teaches a method for plasma etching control by adjusting nitrogen to oxygen ratios and carbon to fluorine ratios. *Becker* teaches a method for etching a substrate by maintaining various portions of the etch chamber at elevated temperatures.

However, *Su* and *Becker*, singly or in combination, fails to teach or suggest a modification of the process of *Desphande* in a manner that yields an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. As such, a *prima facie* case of obviousness has not been established as the combination of the cited references fails to yield the limitations recited in claim 1.

Thus, claims 10-11 are patentable over *Desphande* in view of *Su* and further in view of *Becker*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

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C. Claims 3 and 13

Claims 3 and 13 stand rejected as being unpatentable over *Desphande* in view of *Su* and further in view of United States Patent No. 6,451,703 issued on September 17, 2002 to *Liu, et al.* (hereinafter *Liu*). The Applicants respectfully disagree.

Independent claim 1 recites limitations not taught or suggested by any combination of *Desphande*, *Su*, and *Liu*. As discussed above, *Desphande* in view of *Su* fails to teach or suggest an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. *Liu* teaches a magnetically enhanced plasma etch process using a heavy fluorocarbon etching gas. However, *Liu* fails to teach or suggest a modification of the process of *Desphande* in view of *Su* in a manner that yields an etching gas mixture comprising a fluorine-rich fluorocarbon or hydrofluorocarbon gas, a nitrogen-containing gas, and a hydrogen-rich hydrofluorocarbon gas, as recited in claim 1. As such, a *prima facie* case of obviousness has not been established as the combination of the cited references fails to yield the limitations recited in claim 1.

Thus, claims 10-11 are patentable over *Desphande* in view of *Su* and further in view of *Liu*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

CONCLUSION

Thus, the Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issuance are earnestly solicited.

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If, however, the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Mr. Alan Taboada at (732) 935-7100 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

11/11/05
Date

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